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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,308	11/28/2001	Jean-Jacques Duruz	MOL0587CON	2385

7590

09/18/2003

Jayadeep R. Deshmukh  
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Princeton, NJ 08540

EXAMINER

VALENTINE, DONALD R

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 09/18/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/001,308

Applicant(s)

DURUZ ET AL.

Examiner

Donald R. Valentine

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-82 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 7-9, 18-21, 23-24, 27-28, 34-35, 37, 41, 46, 50, 58-59, 61, 66-68, 72-75, 77-79, 81-82

is/are rejected.

- 7) ☒ Claim(s) 3-6, 10-17, 22, 25, 26, 29-33, 36, 38-40, 42-45, 47-49, 51-57, 60, 62-65, 69-71, 76 and 80 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

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PTOL-326 (Rev. 04-01)

**Office Action Summary**

Part of Paper No. 4

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-2, 7-9, 18-21, 23-24, 27-28, 34-35, 37, 41, 46, 50, 58-59, 61, 66-68, 72-75, 77-79, 81-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al in view of Keller.

Yamada et al show an electrolytic cell for electrolysis of alumina dissolved in molten cryolyte (fluoride-containing). The cell includes an anode, which is metal-based, and has an electronic conductive oxide, (electrochemically-active),

iron oxide-based outside coating (layer). (See col. 6, lines 65-68). Yamada et al disclose plasma spraying and coating the electrode base with an alloy and oxidizing the coated electrode. (Col. 7, lines 15-25).

Yamada et al disclose plasma spraying and coating the electrode base with an alloy and oxidizing the coated electrode. (Col. 7, lines 15-25). Yamada et al disclose heating the electrode for purposes of fabrication. (Col. 7, lines 40-45).

Yamada et al also teach iron oxides as anode components. (See 6, lines 20-59.)

Yamada et al do not teach maintaining the electrolyte with a sufficient concentration of iron species to maintain the oxide layer of the anode dimensionally stable without excessively contaminating the product aluminum.

Keller shows electrolysis of alumina in a cryolyte bath utilizing an anode which is exposed to the electrolyte by a surface mixture of iron oxide-nickel oxide. (See col. 4, lines 4-51). Keller adds constituents of the anode to the electrolyte melt (See col. 4, lines 10-30) namely measured amounts of iron oxide and nickel oxide, such amounts being in a concentrations which, apparently, are those amounts which maintain the anode composition at a level commensurate with the dissolution amounts of the anode itself.

It would be considered within the skill of the art to feed into the electrolyte of Yamada et al anode constituents lost by due to corrosion as taught by Keller because the anodes of Yamada et al suffer from dissolution via corrosion, the reaction in both references is a surface one and Keller teaches how to account for anode dissolution by way of corrosion by feeding anode constituents into the electrolyte melt.

***Allowable Subject Matter***

4. Claims 3-6, 10-17, 22, 25-26, 29-33, 36, 38-40, 42-45, 47-49, 51-57, 57, 60, 62-65, 69-71, 76 and 80 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: The references of record do not show or suggest a cell for electrowinning aluminum from alumina dissolved in a molten fluoride containing electrolyte, comprising one or more anodes each having a metal based substrate and an electrochemically-active iron oxide-based outside layer wherein the anode substrate comprises a plurality of layers carrying on the outermost layer the iron oxide based layer.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Duruz et al show ceramic oxide electrodes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald R. Valentine whose telephone number is 703-308-3327. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 703-308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Donald R. Valentine  
Primary Examiner  
Art Unit 1742

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September 8, 2003